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ALPHA & OMEGA SEMICONDUCTOR, INC.
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UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF CALIFORNIA
SAN FRANCISCO DIVISION

ALPHA & OMEGA
SEMICONDUCTOR, INC., a
California corporation; and ALPHA &
OMEGA SEMICONDUCTOR, LTD., a
Bermuda corporation,

Plaintiffs,

v.

FAIRCHILD SEMICONDUCTOR
CORP., a Delaware corporation,

Defendant.

AND RELATED COUNTERCLAIMS

Case No. 07-2638 JSW (EDL)
(Consolidated with Case No. 07-2664 JSW)

**REPLY IN SUPPORT OF AOS'S
MOTION TO STRIKE FAIRCHILD
SEMICONDUCTOR CORP.'S PATENT
LOCAL PATENT L.R. 3-1
DISCLOSURE**

Date: November 27, 2007
Time: 9:00 a.m.
Location: Courtroom E, 15th Floor
Judge: Hon. Elizabeth D. Laporte

1 AOS's Motion to Strike ("Hebert Decl."), at ¶ 9.) As might be expected, the devices must
2 be configured for different applications. For example, devices that are switched on and
3 off often and under severe conditions (SMPS, DC-DC converters, and so forth) require
4 different characteristics than devices that are rarely switched. Motor-control devices (*e.g.*,
5 devices used in handheld battery-powered tools), must be able to survive much harsher
6 conditions than MOSFETs used to protect batteries of notebook computers and, as a
7 result, special techniques to clamp the breakdown voltage and protect the active cells of
8 Power Tool MOSFETs are integrated in the structure. (*Id.* at ¶ 10.)

9 To succeed in each of these different applications, AOS's devices have different
10 operating performance characteristics. For example, different AOS MOSFET devices
11 have different turn-on (threshold) voltages, different gate voltage ratings (maximum V_{gs}
12 voltage which can be applied for safe operation), different drain voltage ratings
13 (maximum V_{ds} voltage which can be applied for safe operation), different maximum
14 drain current ratings, different drain to source resistance, different transconductance,
15 different drain to source breakdown voltages (BV_{dss}), different capacitances (input
16 capacitance C_{iss} , output capacitance C_{oss} and gate-drain capacitance C_{rss}), different gate
17 resistance (R_g), and different optimum operating frequencies. (*Id.* at ¶ 6.)

18 To achieve the different performance characteristics, AOS's MOSFET devices
19 have different features, such as different silicon substrates (n type, p type, and different
20 doping concentrations), different drain drift regions, different doping concentrations in
21 certain regions, carrier type (n or p) and thickness, different trench depth, different trench
22 width, different distances between the trenches, different active cell geometries (striped,
23 closed-cell for example), different depths of the various doping profiles (sometimes
24 referred to as wells), and different number of steps used to fabricate the devices. While
25 not all of the features are different as to every product, there are certainly some
26 differences between each of the products.¹ (*Id.* at ¶ 8.)

27 ¹ While the products may share some features, and may share some features that are
28 relevant to certain of the asserted claims, they do not share every feature that is relevant to
every asserted claim, as discussed below.

In sum, there are numerous differences among AOS's power MOSFETs devices, many of which are the result of the different manufacturing processes used by AOS. It is these very manufacturing processes that are the subject of the Fairchild patents asserted against AOS. *See, e.g.*, Declaration of Igor Shoiket in Support of Fairchild's Opposition to AOS's Motion to Strike ("Shoiket Decl."), Ex. 1, U.S. Patent No. 6,429,481 "Field Effect Transistor and Method of Its Manufacture"; Ex. 2, U.S. Patent No. 6,521,497 "Method of Manufacturing a Field Effect Transistor"; Ex. 3 U.S. Patent No. 6,710,406 "Field Effect Transistor and Method of Its Manufacture".

III. ARGUMENT

A. Patent Local Rule 3-1 Requirements

Patent Local Rule 3-1 requires a party claiming patent infringement to serve a disclosure identifying (a) each claim of each patent in suit that is allegedly infringed; (b) separately for each asserted claim, each accused apparatus, product, and so forth, of each opposing party of which the party is aware; and (c) specifically where each element of each asserted claim is found within each accused product. Of particular relevance to the current motion, the Patent Local Rules require the identification of the accused products to be "*as specific as possible*." *See* Patent Local Rule 3-1(b) (emphasis added).

The primary purpose of Rule 3-1 is to require a plaintiff to show "why it believed before filing the claim that it had a reasonable chance of proving infringement." *Renesas Tech. Corp. v. Nanya Tech. Corp.*, No. 03-5709, 2004 WL 2600466, *2 (N.D. Cal. Nov. 10, 2004) (quotation and citation omitted). In order to satisfy this requirement, a plaintiff must provide the detailed disclosures set forth in Rule 3-1 for each and every accused product or the plaintiff must "convince the court that reverse engineering [every accused product] would not provide more detail regarding potential infringement." *Id.*

In *Renesas*, the court allowed the plaintiff to provide disclosures for representative products only after being convinced that the differences between products were not relevant to the alleged infringement. All of the accused products contained the same allegedly infringing circuitry as the products that were reversed engineered; the remaining

1 differences in the products were “simply a result of various product options (including
 2 different data widths, speeds, and packaging) that [did] not change the relevant circuitry.”
 3 *Id.* at 3. The court in *Monster Cable Prods., Inc. v. The Quest Group*, applied similar
 4 reasoning and ruled that reverse engineering of every accused product was not required if
 5 the accused products contained the same allegedly infringing elements. *Monster Cable*
 6 *Prods.*, No. 04-5, 2005 WL 25-6451, *4-5 (N.D. Cal. Oct. 13, 2005). Where the accused
 7 products differ from each other in ways material to the issues of infringement, selecting a
 8 so-called representative product is inappropriate. *Id.* at *5.

9 Fairchild concedes that it has not provided a Rule 3-1 Disclosure for 324 of the 342
 10 products it purports to accuse. It effectively concedes that it did not conduct any reverse
 11 engineering or equivalent analysis of 324 of the devices it purportedly accuses. In an
 12 attempt to justify this approach, Fairchild contends that the 14 products it has analyzed
 13 “do not materially differ” from the other 324 products. Opp. at 9:1-2. Fairchild is wrong,
 14 as discussed below.

15 **B. Dr. Blanchard Uses The Wrong Criteria to Reach The Wrong**
 16 **Conclusion Regarding AOS’s MOSFET Products**

17 Relying exclusively on a declaration from its retained expert, Fairchild asserts that
 18 all of the accused products can be categorized using four basic criteria: (1) whether they
 19 are N-channel, P-channel, dual-channel, or complementary devices; (2) whether they have
 20 either a closed-cell or an open-cell configuration; (3) whether they have either a trench
 21 gate design or a planar gate design; and (4) their drain-source voltage (V_{DS}) rating. These
 22 broad and generic categories are not relevant to the claims asserted by Fairchild. Fairchild
 23 cannot use these categories to show how the 14 accused products are representative of all
 24 342 of AOS’s MOSFET products as they related to Fairchild’s asserted claims. Just
 25 because Fairchild has reverse engineered one N-channel product (or one closed-cell, or
 26 one trench-gate product) does not mean that that product is representative of every other
 27 N-channel product with respect to the elements of Fairchild’s patent claims.

28 One example illustrating the flaws in Fairchild’s approach is the drain-source

1 voltage (V_{DS}) criterion. In his declaration, Dr. Blanchard defines “low-voltage devices”
 2 as “those having a drain-source voltage between approximately 20V and 100V for an N-
 3 channel device” and concludes that all 342 accused products are low-voltage devices.
 4 (Declaration of Dr. Richard Blanchard In Support of Fairchild’s Opposition to AOS’s
 5 Motion to Strike (“Blanchard Decl.”), ¶¶ 10 & 12.) In fact, while the 14 accused products
 6 selected by Fairchild all have the same drain-source voltage of 30V, the drain-source
 7 voltage of the other AOS products purportedly accused by Fairchild ranges from 12V
 8 (e.g., AO4437) to 20V (e.g., AO6702), 30V (e.g., AO6800), 40V (e.g., AO4617), 60V
 9 (e.g., AO4612), 75V (e.g., AO4850), 105V (e.g., AOD464), up to 200V (e.g., AOD450).
 10 (Hébert Decl., at ¶ 13; Schuman Decl., Ex. A, Tab 1 (Selection guide).) Thus, at a
 11 minimum, AOD464 and AOD450 are not low-voltage devices under Dr. Blanchard’s own
 12 definition and are certainly are not represented by the 14 products Fairchild has selected.

13 Similarly, the highest drain-source resistance (R_{DS}) among the 14 specifically
 14 identified products is 52 mΩ (AOD6405), while R_{DS} of the 342 products AOS products (at
 15 $V_{GS}=10V$) ranges from 3.5 mΩ (AOD438) to 1600 mΩ (AO5800E). (Hébert Decl., at
 16 ¶ 12.) Again, the 14 “representative” products are not representative at all.

17 These and other performance characteristics are achieved by product features and
 18 fabrication methods. (Hébert Decl., at ¶ 5-10.) In other words, the differing performance
 19 across AOS’s product line is reflective of differing manufacturing methods.

20 Unlike the substantially similar products at issue in *Renesas* and *Monster Cable*,
 21 Fairchild has not shown that the 342 AOS products it purports to accuse are similar in
 22 ways that are relevant to the claims asserted. The significant variation of many
 23 performance attributes of the products is relevant to the different claim limitations of
 24 Fairchild’s asserted claims based on the way the products are designed and manufactured,
 25 Hébert Decl., at ¶ 14, which is what the patents-in-suit are focused on.

26 **C. Fairchild’s Own Reverse-Engineering Data Demonstrates that AOS’s**
 27 **Products Are Not Identical With Respect to the Features Relevant to**
 28 **Fairchild’s Patents.**

Fairchild’s opposition relies entirely on the proposition that the 14 products that

1 Fairchild has reverse engineered are representative of all of AOS's products, as evidenced
 2 by the reverse engineering analyses attached as "evidence" to Fairchild's Patent L.R. 3-1
 3 Disclosure.² Fairchild and its expert assert that:

4 As demonstrated by Fairchild's claim charts and the exhibits
 5 attached thereto, each of the 14 reverse-engineered AOS
 6 products has a similar dopant concentration profile in a cross-
 section between the trenches, indicating that there is little or
no difference between the devices for purposes of
infringement analysis.

7 Opp. at 9:11-4 (*citing* Blanchard Decl., ¶ 11) (emphasis added). But contrary to this
 8 assertion, Fairchild's Patent L.R. 3-1 Disclosure shows there are relevant differences
 9 among the 14 selected products that Fairchild broadly asserts are representative of all
 10 other AOS products.

11 For example, claim 1 of Fairchild's asserted U.S. Patent No. 6,429,481 recites:

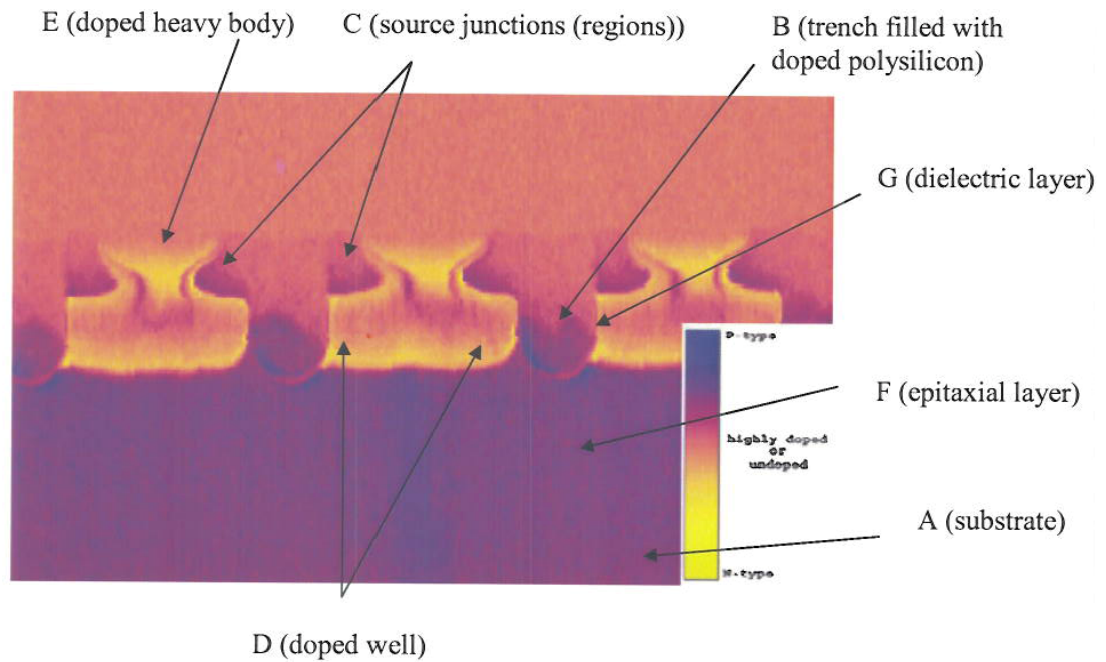
12 a doped well ... formed into the substrate to a depth that is less
 13 than said predetermined depth of the trench

14 (Shoiket Decl., Ex. 1, col. 8, lines 52-55 (claim 1).) Many of Fairchild's asserted claims
 15 likewise recite that the depth of the well is less than the depth of the trench. (*See e.g.*
 16 Shoiket Decl., Ex. 3 ('406 patent), col. 8, lines 55-58 (claim 1); Shoiket Decl., Ex. 4 ('195
 17 patent), col. 8, lines 49-53 (claim 1).)

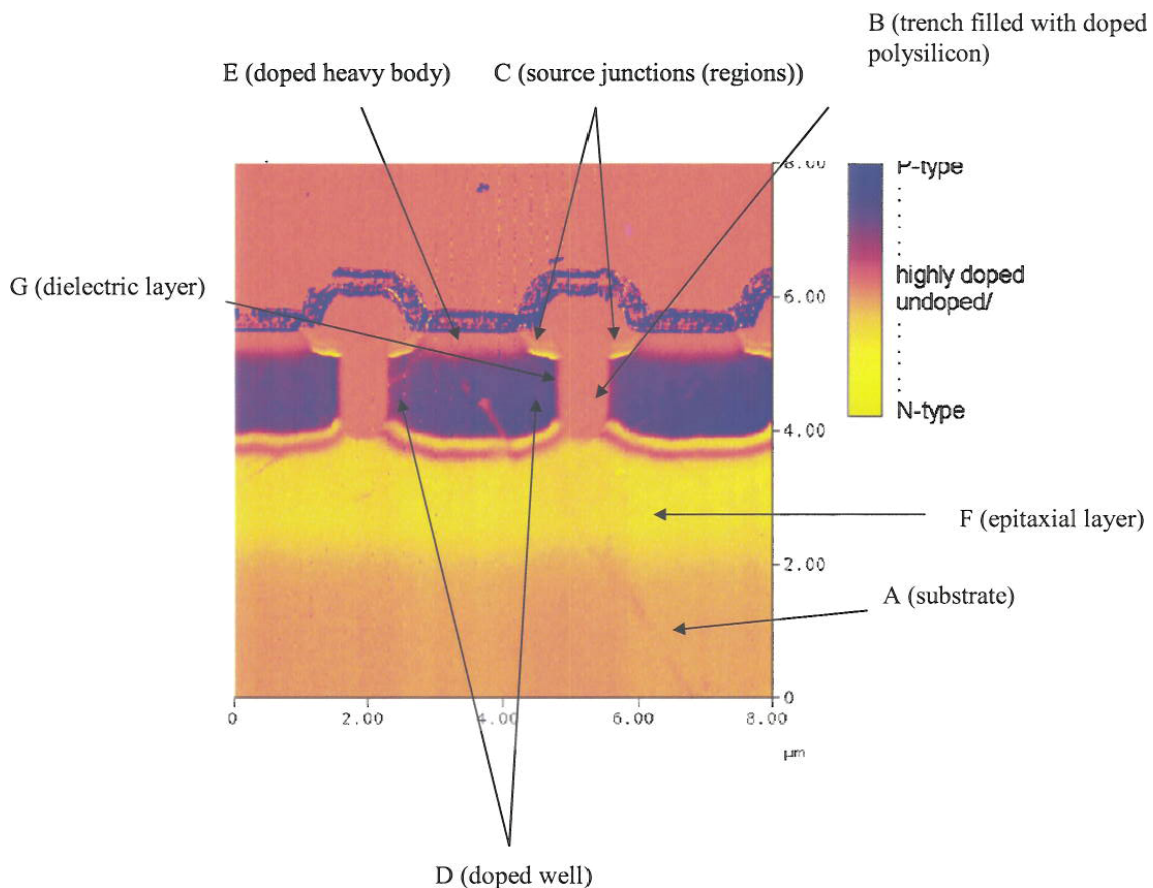
18 Even a casual review, however, of the scanning capacitance microscopy ("SCM")
 19 analyses provided by Fairchild confirms substantial differences between the 14 accused
 20 products, including differences with respect to the claim limitations requiring the depth of
 21 the well to be less than the depth of the trench. For example, the following is the SCM
 22 image of AO4413A provided by Fairchild:

23 ² Fairchild is eager to compare the volume of "evidence" attached to its Rule 3-1
 24 Disclosure to that attached to AOS's Rule 3-1 Disclosure. Opp. at 1. Again, the purpose
 25 of the 3-1 Disclosures is not to provide evidence of infringement, but to streamline
 26 discovery by identifying the products that the plaintiff in good faith accuses of
 infringing. Moreover, the difference between Fairchild's Disclosures and AOS's
 Disclosures is that AOS only accuses products having a structure corresponding to the
 products it has reverse engineered, while Fairchild accuses every AOS product of
 infringing.

27 In any event, the sufficiency of AOS's Disclosures is irrelevant to this motion and
 28 if AOS's Disclosures are adjudged to be insufficient that will still not excuse or justify the
 deficiencies AOS has identified within Fairchild's Disclosures.



(Declaration of Brett Schuman In Support of AOS's Motion to Strike ("Schuman Decl."), Ex. A, Fig. AO4413A-3.) The following is the SCM of AO4422 provided by Fairchild:



(Schuman Decl., Ex. A, Fig. A04422-4.)³ In the top figure, the depth of the well D may be less than the depth of the trench B. But in the bottom figure, the depth of the well D is **greater** than the depth of the trench B. The import of this difference in relative depths of the trench and the well is that the AO4422 product does not infringe certain Fairchild claims.⁴ Accordingly, Fairchild's own purported reverse-engineering analysis demonstrates that there are differences among AOS's products with respect to features required by Fairchild's patent claims.

Likewise, a review of the other analyses attached to Fairchild's Patent L.R. 3-1 Disclosure confirms numerous differences between these 14 AOS products. While Fairchild's claim charts do not explain many aspects of Fairchild's theories of infringement,⁵ it is evident that the depths of the wells and trenches vary, as do the doping profiles indicated in the Scanning Electron Microscopy ("SEM") and the Secondary Ion Mass Spectroscopy ("SIMS") analyses.

D. Fairchild's Rule 3-1 Disclosures Are Insufficient Even as to the 14 So-Called Representative Accused Products

In its Opposition, Fairchild incorrectly asserts that it has provided sufficient Patent L.R. 3-1 Disclosures as to the 14 products it has reverse engineered. *See Opp.* at 7:8-17. But Fairchild has failed to provide reverse-engineering data for at least three of the 14 accused products: AO4912, AOD438, and AOL1414. For example, the SCM image of die edge for AO4912 is not actually taken from AO4912. Rather, Fairchild simply borrowed the SCM image of die edge for AOL1414 and used this image in its claim charts accusing AO4912. (Schuman Decl., Ex. A, Fig. AO4912-7 (acknowledging that "[t]his

³ These images, including the labels, represent Fairchild's assertions. AOS makes no representations and waives no objections with regard to the purported analysis or labels. In Fairchild's Disclosures, the reverse engineering analysis is included following the last claim chart (after Tab 57).

⁴ Fairchild appears to have no good faith basis for asserting these claims against the AOS products having a well with a depth greater than the depth of the trench.

⁵ For example, Fairchild's claim charts and analyses provide no support as to the "transistor breakdown initiation point" recited in many claims. (Shoiket Decl., Ex. 1 ('481 patent), at col. 8, lines 64-65 (claim 1).)

figure is based on AOL1414”).) Despite AOS’s having called Fairchild’s attention to this deficiency during the meet and confer process, Fairchild has refused to rectify the deficiency and supplement its Disclosures. (Schuman Decl., Ex. B, at p. 3.)

IV. CONCLUSION

In sum, Fairchild is required to provide AOS with a disclosure that complies with the Patent Local Rules. That means it must either: (1) provide claim charts and other information for each accused AOS product; or (2) eliminate from its identification of accused AOS products those for which it cannot or will not provide the information required by the Patent Local Rules. In any event, AOS should not be compelled to provide discovery regarding its entire product line based on the demonstrably incorrect assertion of Fairchild that all of AOS’s products are identical for purposes of infringement. The Court should strike Fairchild’s Patent Local Patent L.R. 3-1 Disclosure and compel Fairchild to serve disclosures compliant with Patent Local Rule 3-1 by December 4, 2007.

Dated: November 13, 2007

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